4. HUMAN HEALTH AND ENVIRONMENTAL COMPLIANCE

4.1 Remedial Action Objectives

The RAOs for OU 5-12 were developed in accordance with the National Contingency Plan (EPA 1990) and are based on the results of the human health and ecological risk assessments as outlined in the ROD (DOE-ID 2000a). The intent of the RAOs is to set goals for the protection of human health and the environment. The following sections describe the RAOs for ARA-02, ARA-16, and ARA-25 based upon the decisions in the ROD (DOE-ID 2000a). The four inactive tank sites (ARA-07, ARA-08, ARA-13, and ARA-21) are not specifically described in these sections since the ROD (DOE-ID 2000a) defines these as "No Action" sites with the recommendation that the components either be removed or abandoned in place. No RAOs are associated with these inactive tank sites.

4.1.1 ARA-02 Sanitary Waste System

Remediation objectives, based on the unacceptable risks discussed in the ROD (DOE-ID 2000a), were developed for the ARA-02 Sanitary Waste System. A summary of the implementation of the remediation objectives is provided in Section 2.2.2. No unacceptable ecological risk is associated with the system. Human health risk in excess of 1E-04 is posed primarily by external exposure to ionizing radiation. The radioactive contaminants of concern are Cs-137, Ra-226, U-235, and U-238. Dermal adsorption and ingestion of PCBs and ingestion of lead pose secondary human health risks.

The RAOs for the ARA-02 Sanitary Waste System apply only to the ARA-02 seepage pit sludge because all COCs at the site are contained within the sludge. The following RAOs were developed to protect human health:

- Inhibit direct exposure to radionuclide COCs that would result in a total excess cancer risk greater than or equal to 1 in 10,000 for current and future workers and future residents

- Inhibit dermal adsorption of COCs that would result in a total excess cancer risk greater than or equal to 1 in 10,000 or a hazard index of 2 or greater for current and future workers and future residents.

To meet these objectives, remediation goals were established. Remediation goals can be satisfied by either cleaning up to the identified contaminant concentration (see Table 4-1) or by removing all contaminated media down to the basalt interface. Removing the seepage pit contents down to basalt will be protective because surface exposure pathways will be eliminated. The RI/FS for WAG 5 (Holdren et al. 1999) showed that groundwater exposure pathways pose a cumulative risk less than 1E-04 and a hazard index less than 1 for the baseline no action alternative. Removal of contaminated media from WAG 5 will further reduce the potential groundwater risk. Therefore, remediation to retrieve residual contamination that may have migrated into the fractured basalt would not be justified.

Table 4-1. Remediation goals for the ARA-02 Sanitary Waste System.

Contaminant of Concern	Soil Concentration Remediation Goal
Cs-137	8.5 pCi/g
Ra-226	1.2 pCi/g
U-235	6.2 pCi/g
U-238	10.6 pCi/g
Aroclor-1242	1 mg/kg
Lead	400 mg/kg

4.1.2 ARA-16 Radionuclide Tank

Remediation objectives, based on the unacceptable risks discussed in the ROD (DOE-ID 2000a), were developed for the soil at the ARA-16 Radionuclide Tank. A summary of the implementation of the remediation objectives is provided in Section 2.2.3. Human health risk of 1E-04 is posed primarily by external exposure to ionizing radiation from Cs-137. In addition, remediation will be applied to address the principal threat waste contained in the tank.

The following land-use assumptions were used in developing the RAOs for the ARA-16 tank:

- Institutional controls before 2095 will include current security controls, site access controls, radiological controls, and worker monitoring. An Institutional Control Plan will be included with the WAG 5 RD/RA Phase II Work Plan.

- For 2095 and beyond, homes could be built anywhere within WAG 5, and the water supply well could be drilled adjacent to the home.

The human health threat posed by the radioactively contaminated soil and gravel in and around the ARA-16 tank vault is external exposure to ionizing radiation. No unacceptable ecological risk is associated with this site. The RAO developed for the soil and gravel is to inhibit direct exposure to radionuclide COCs that would result in a total excess cancer risk greater than or equal to 1 in 10,000 for current and future workers and for future residents. To meet this goal, a remediation goal of 23 pCi/g for Cs-137 was established.

Though no releases have occurred from the ARA-16 tank and the tank is not leaking, the tank contents are identified as principal threat waste and could pose an unacceptable risk if released to the environment. Therefore, an additional RAO was developed to prevent release of the tank contents and preclude human and ecological exposures to the ARA-16 tank contents.

4.1.3 ARA-25 Soils and Foundation Walls

Remediation objectives, based on unacceptable risks as described in the ROD (DOE-ID 2000), were developed for ARA-25. A summary of the implementation of the remediation objectives is provided in Section 2.2.5. Human health risk in excess of 1E-04 is posed primarily by external exposure to ionizing radiation. The radioactive contaminants of concern are Cs-137 and Ra-226. Dermal adsorption of arsenic and ingestion of Ra-226, arsenic, and lead pose secondary human health risks. Ecological hazard quotients greater than 10 are from exposure to copper and lead in the soil.

The following land-use assumptions were used in the development of the remedial action objectives for WAG 5 remediation:

- Institutional controls until 2095 will include current security controls, site access controls, radiological controls, and worker monitoring. An Institutional Control Plan will be included with the WAG 5 RD/RA Phase II Work Plan.

- For 2095 and beyond, homes could be built anywhere within WAG 5, and a water supply well could be drilled adjacent to the home.

The following remedial action objectives were developed to protect human health and the environment for ARA-25:

- Inhibit direct exposure to radionuclide COCs that would result in a total excess cancer risk greater than or equal to 1 in 10,000 for current and future workers and future residents

- Inhibit dermal adsorption of COCs that would result in a total excess cancer risk greater than or equal to 1 in 10,000 or a hazard index of 2 or greater for current and future workers and future residents

- Inhibit ecological receptor exposures to contaminated soil with concentrations of contaminants greater than or equal to 10 times background values and that result in a hazard quotient greater than or equal to 10.

To meet these objectives, remediation goals were established (see Table 4-2). Remediation goals can be satisfied by either cleaning up to the identified contaminant concentration or by removing all soil down to the basalt interface. Removing soil down to basalt will be protective because surface exposure pathways will be eliminated. The RI/FS for WAG 5 (Holdren et al. 1999) showed that groundwater exposure pathways pose a cumulative risk less than 1E-04 and a hazard index less than 1 for the baseline no action alternative. Therefore, remediation to retrieve residual contamination that may have migrated into the fractured basalt would not be justified. It is estimated that approximately 54 m^3 (71 yd^3) of soil from ARA-25 will require remediation.

Table 4-2. Remediation goals for ARA-25.

Contaminant of Concern	Soil Concentration Remediation Goal
Arsenic	5.8 mg/kg[a]
Cs-137	23 pCi/g
Ra-226	1.2 pCi/g
Copper	220 mg/kg
Lead	400 mg/kg

a. ARA-25 has three human health contaminants of concern, excluding lead. Remediation goals for two of the three contaminants (i.e., arsenic and Ra-226) are background values. For the third, Cs-137, the 1E-04 risk-based concentration is given.

4.2 Applicable or Relevant and Appropriate Requirements

4.2.1 ARA-02 Sanitary Waste System

Table 4-3 summarizes how the substantive requirements of the ARARs and the to-be-considered (TBC) requirements for the ARA-02 Sanitary Waste System have been addressed by the remedial design or will be addressed during the remedial action. The substantive requirements of RCRA and IDAPA ARARs specific to hazardous waste will be met. Use of air monitoring and dust suppression techniques during excavation will ensure compliance with emissions ARARs. Control of off-gases generated during the thermal treatment process will be the responsibility of the treatment facility and is not relevant to actions conducted within WAG 5. The site has been surveyed for cultural and archeological resources (Appendix I), and appropriate actions will be taken to satisfy ARARs for protection of sensitive resources. The DOE Order 5400.5 TBC will be met through administrative and engineering controls to limit exposures to allowable levels.

4.2.2 ARA-16 Radionuclide Tank

Table 4-4 summarizes how the substantive requirements of the ARARs and the TBC requirements for the ARA-16 Radionuclide Tank have been addressed by the remedial design or will be addressed during the remedial action. As shown in the table, the substantive requirements of RCRA and IDAPA ARARs specific to hazardous waste and the TSCA ARARs specific to PCB-contaminated waste in the ARA-16 tank waste will be met. Compliance with emission-control ARARs will be ensured by using dust suppression techniques during excavation. Controlling the off-gases generated during the thermal treatment process will be the responsibility of the treatment vendor and is not relevant to actions conducted within WAG 5. The site has been surveyed for cultural and archeological resources (Appendix I) and appropriate actions taken to satisfy ARARs protective of sensitive resources. The TBC DOE Order 5400.5 will be met through administrative and engineering controls to limit exposures to allowable levels.

4.2.3 Inactive Waste Systems

No ARARs were established for the inactive waste systems. These sites are being addressed as a safety consideration. However, all appropriate environmental requirements of RCRA and TSCA will be followed during sampling, removal, and backfilling activities. Table 4-5 summarizes how the regulatory requirements have been addressed by the remedial design or will be addressed during the remedial action. If it is determined, following laboratory analysis and completion of the hazardous waste determination, that no RCRA hazardous or TSCA-regulated constituents exist at the site, these requirements will no longer apply.

4.2.4 ARA-25 Contaminated Soil Site

Table 4-6 summarizes how the substantive requirements of the ARARs and the TBC requirements for the ARA-25 contaminated soil site have been addressed by the remedial design or will be addressed during the remedial action. The RCRA ARARs listed in the ROD (DOE-ID 2000a) for ARA-25 were listed conditionally. Since the issuance of the ROD, an approved waste designation has been obtained that states the soils at ARA-25 are not RCRA hazardous. Therefore, the RCRA ARARs no longer apply. Compliance with emission control ARARs will be ensured by using dust suppression techniques during excavation. The site has been surveyed for cultural and archeological resources (Appendix I), and appropriate actions will be taken to satisfy ARARs for protection of sensitive resources. The DOE Order 5400.5 TBC will be met through administrative and engineering controls to limit exposures to allowable levels.

Table 4-3. Compliance with ARARs and TBCs for the ARA-02 Sanitary Waste System.

Category	Citation	Relevancy	Compliance Strategy
Action-Specific ARARs			
Rules for the Control of Air Pollution in Idaho			
• Toxic Substances IDAPA 16.01.01.161	The release of carcinogenic and noncarcinogenic contaminants into the air must be estimated before the start of construction, controlled, and monitored during excavation of soil, removal of seepage pit sludge, cinder blocks, septic tanks and piping, and decontamination of septic tanks and piping.	A[a]	Releases of carcinogenic and noncarcinogenic contaminants into the air from the site are addressed in Appendix H. Air emissions will be monitored during excavation, and dust suppression measures will be used.
• Toxic Air Emissions IDAPA 16.01.01.585 and .586		A	
• Fugitive Dust IDAPA 16.01.01.650 and .651	Requires control of dust at all times, especially during excavation and removal of the seepage pit sludge, cinder blocks, septic tanks and piping.	A	Dust suppression measures will be implemented, as necessary, during the remedial action to minimize the generation of fugitive dust. These measures may include water sprays, use of tarps, keeping vehicle speeds to a minimum, and work controls during periods of high wind.
• Requirements for Portable Equipment IDAPA 16.01.01.500.02	Portable equipment for removal of the seepage pit and septic tank system as well as any portable support equipment must be operated to meet state and federal air emissions rules.	A	When used, portable equipment will comply with the appropriate INEEL Plans and MCPs and will be in accordance with the project HASP (INEEL 2000).
National Emission Standards for Hazardous Air Pollutants (NESHAP)			
• Radionuclide Emissions from DOE Facilities 40 CFR 61.92	Limits exposure of radioactive contamination release to 10 mrem/year for the off-Site receptor and establishes monitoring and compliance requirements.	A	Releases of radiological contaminants into the air from this site are addressed in Appendix H. Air emissions will be monitored during excavation, and dust suppression measures will be used. Radionuclide emission calculations and air modeling are presented in Appendix H. The model resulted in an estimate of 4.7 E-07 mrem/yr dose at the site boundary. The calculated emissions will be included in the INEEL's annual NESHAPs report, which determines the effective dose equivalent from the INEEL to members of the public.
• Emission Monitoring 40 CFR 61.93			
• Emission Compliance 40 CFR 61.94(a)			

Table 4-3. (continued).

Category	Citation	Relevancy	Compliance Strategy
Resource Conservation and Recovery Act—Standards Applicable to Generators of Hazardous Waste			
• Hazardous Waste Determination IDAPA 16.01.05.006 (40 CFR 262.11)	A hazardous waste determination is required for the septic tanks, piping, and any secondary waste disposed on the INEEL.	A	A hazardous waste determination will be developed to evaluate sampling data and process knowledge to determine disposition of the waste. This will be completed per MCP-69, "Waste Generator Services–Hazardous Waste Management."
Resource Conservation and Recovery Act—Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Units			
• General Waste Analysis IDAPA 16.01.05.008 (40 CFR 264.13 [a][1–3])	Analysis requirements apply to the seepage pit sludge, cinder blocks, septic tanks, piping, and secondary waste generated during remediation.	A	Sampling will be performed as per the Phase I Field Sampling Plan (FSP) (DOE-ID 2000c) to determine if the waste meets the land disposal restrictions (LDRs).
• General Inspections IDAPA 16.01.05.008 (40 CFR 264.15)	Regular inspections must be performed during remediation.	A	Inspections will be conducted, and the information obtained will be incorporated into the Annual Institutional Control and Monitoring Report. Inspections will also be conducted as part of operations and maintenance activities.
• Preparedness and Prevention IDAPA 16.01.05.008 (40 CFR 264, Subpart C)	Applies to soil excavation, waste and debris removal, and decontamination activities.	A	Details regarding how the emergency equipment will be maintained and arrangements with local authorities are outlined in the Phase I HASP (INEEL 2000).
• Contingency Plan and Emergency Procedures IDAPA 16.01.05.008 (40 CFR 264, Subpart D)	Applies to soil excavation, waste and debris removal, and decontamination activities.	A	The Phase I HASP (INEEL 2000) establishes an emergency response plan that documents the coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment.
• Equipment Decontamination IDAPA 16.01.05.008 (40 CFR 264.114)	All equipment used during remediation must be decontaminated if hazardous waste is contacted.	A	Equipment decontamination will be conducted in accordance with the Phase I HASP (INEEL 2000); Plan (PLN)-461, *INEEL CY2000 Pollution Prevention/Waste Minimization Plan* (INEEL 2000); and waste management procedures outlined in the Phase I Work Plan, Appendix J.

Table 4-3. (continued).

Category	Citation	Relevancy	Compliance Strategy
• Use and Management of Containers IDAPA 16.01.05.008 (40 CFR 264.171–177)	Applicable to the seepage pit sludge, cinder blocks, septic tanks, piping, and any secondary hazardous waste generated during remediation and managed in containers.	A	The waste management procedures outlined in the Phase I Work Plan, Appendix J ensure waste is compatible with the container and container integrity is maintained. Weekly inspections will be conducted by Waste Generator Services. Secondary containment for all containers with free liquids will be provided at the CERCLA Waste Storage Units (PBF-ARA-1-CARGO-A). For all other containers, a storage area will be graded to provide runoff away from the containers.
• Tank Closure and Post-Closure Care IDAPA 16.01.05.008 (40 CFR 264.197 [a])	Applies to seepage pit sludge, cinder blocks, septic tanks, and piping.	A	Removal of all waste and system components will be conducted. Sampling as per the Phase I FSP (DOE-ID 2000c) will then occur to verify that a release to the soil has not occurred.
Resource Conservation and Recovery Act—Land Disposal Restrictions			
• Treatment Standards IDAPA 16.01.05.011 (40 CFR 268.40 [a][b][e])	Seepage pit sludge, cinder blocks, septic tanks, and piping must be treated, if necessary, to meet land disposal restriction criteria before disposal commences.	A	Per the Phase I FSP (DOE-ID 2000c), waste will be analyzed per LDRs. Sludge will be treated at WERF and stabilized, if necessary, to meet the Envirocare waste acceptance criteria. Debris will be sampled to determine if waste meets LDRs or if encapsulation is required for disposal. If required, encapsulation will be conducted at Envirocare.
• Treatment Standards for Hazardous Debris IDAPA 16.01.05.011 (40 CFR 268.45 [a–d])		A	Per the Phase I FSP (DOE-ID 2000c), waste will be analyzed per LDRs. Sludge will be treated at WERF and stabilized, if necessary, to meet the Envirocare waste acceptance criteria. Debris will be sampled to determine if waste meets LDRs or if encapsulation is required for disposal. If required, encapsulation will be conducted at Envirocare.

Table 4-3. (continued).

Category	Citation	Relevancy	Compliance Strategy
• Universal Treatment Standards IDAPA 16.01.05.011 (40 CFR 268.48 [a])		A	Per the Phase I FSP (DOE-ID 2000c), waste will be analyzed per LDRs. Sludge will be treated at WERF and stabilized, if necessary, to meet the Envirocare waste acceptance criteria. Debris will be sampled to determine if waste meets LDRs or if encapsulation is required for disposal. If required, encapsulation will be conducted at Envirocare.
National Oil and Hazardous Substances Pollution Contingency Plan – Hazardous Substance Response			
• Procedures for Planning and Implementing Off-Site Response Actions 40 CFR 300.440	Applies to all waste disposed off the INEEL.	A	Prior to off-Site disposal, EPA Region 10 will be consulted to ensure that any off-Site vendor(s) selected for treatment and/or disposal will meet this requirement.
Location-Specific ARARs			
National Historic Preservation Act			
• Historic properties owned or controlled by federal agencies 16 USC 470 h-2	The site must be surveyed for cultural and archeological resources before the construction commences, and appropriate actions must be taken to protect any sensitive resources.	A	A cultural and archeological resource investigation was performed. Summaries of the results of the investigation are provided in Appendix I. The investigation shows that there are no cultural or archeological resources within this site.
• Identifying Historic Properties 36 CFR 800.4			
• Assessing Effects 36 CFR 800.5			
Native American Graves Protection and Repatriation Act			
• Custody 25 USC 3002 (43 CFR 10.6)	The site must be surveyed for cultural and archeological resources before the construction commences, and appropriate actions must be taken to protect any sensitive resources.	A	A cultural and archeological resource investigation was performed. Summaries of the results of the investigation are provided in Appendix I. The investigation shows that there are no cultural or archeological resources within this site.
• Repatriation 25 USC 3005 (43 CFR 10.10)			

Table 4-3. (continued).

Category	Citation	Relevancy	Compliance Strategy
To-be-considered guidance			
Radiation Protection of the Public and the Environment			
• DOE Order 5400.5 Chapter II (1)(a,b)	Limits the effective dose to the public from exposure to radiation sources and airborne releases.	—[b]	Will be met by administrative and engineering controls during excavation of contaminated soils, excavation of the system components, and by backfilling and vegetating excavated areas after closure. Job Safety Analyses and/or Radiological Work Permits will be prepared for tasks where there is the potential for exposures to radioactive contamination/materials. Radiological work permits will only be used as determined by the radiological control technician, based on the INEEL *Radiological Control Manual* (Manual #15).

a. A = Applicable.

b. TBCs are not classified as applicable or relevant and appropriate.

Table 4-4. Compliance with ARARs and TBCs for the ARA-16 Radionuclide Tank site.[a]

Category	Citation	Relevancy	Compliance Strategy
Action-Specific ARARs			
Rules for the Control of Air Pollution in Idaho			
• Toxic Substances IDAPA 16.01.01.161	The release of carcinogenic and noncarcinogenic contaminants into the air must be estimated before construction begins, controlled, and monitored during excavation of soil, removal of the waste and tank system, and decontamination of the tank and piping in accordance with state standards.	A[b]	Releases of carcinogenic and noncarcinogenic contaminants into the air from the site are addressed in Appendix H. Air emissions will be monitored during excavation, and dust suppression measures will be used.
• Toxic Air Emissions IDAPA 16.01.01.585 and .586		A	
• Fugitive Dust IDAPA 16.01.01.650 and .651	Dust emission must be controlled at all times, especially during excavation and removal of the tank, vault, and piping in accordance with state standards.	A	Dust suppression measures will be implemented, as necessary, during the remedial action to minimize the generation of fugitive dust. These measures may include water sprays, use of tarps, keeping vehicle speeds to a minimum, and work controls during periods of high wind.
• Requirements for Portable Equipment IDAPA 16.01.01.500.02	Portable equipment for removal of the waste, tank, vault and piping, and any portable support equipment must be operated to meet state and federal air emissions rules.	A	When used, portable equipment will comply with the appropriate INEEL Plans and MCPs and will be in accordance with the project HASP (INEEL 2000).
National Emission Standards for Hazardous Air Pollutants			
• Radionuclide Emissions from DOE Facilities 40 CFR 61.92	Exposure of radioactive contamination release is limited to 10 mrem/year for the off-Site receptor, and emissions and emission monitoring must comply with NESHAP requirements.	A	Releases of radionuclide contaminants into the air from this site are addressed in Appendix H. Air emissions will be monitored during excavation and dust suppression measures will be used. Radionuclide emission calculations and air modeling are presented in Appendix H. The model resulted in an estimate of 2.2 E-09 mrem/yr dose at the site boundary. The calculated emissions will be included in the INEEL's annual NESHAPs report, which determines the effective dose equivalent from the INEEL to members of the public.
• Emission Monitoring 40 CFR 61.93			
• Emission Compliance 40 CFR 61.94(a)			

Table 4-4. (continued).

Category	Citation	Relevancy	Compliance Strategy
Resource Conservation and Recovery Act—Standards Applicable to Generators of Hazardous Waste			
• Hazardous Waste Determination IDAPA 16.01.05.006 (40 CFR 262.11)	A RCRA hazardous waste determination is required for the waste, vault, tank, piping, and any secondary waste generated during remediation, which is to be treated or disposed of on the INEEL.	RA	A hazardous waste determination will be developed to evaluate sampling data and process knowledge to determine disposition of the waste. This will be completed per MCP-69, "Waste Generator Services–Hazardous Waste Management."
Resource Conservation and Recovery Act—Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Units			
• General Waste Analysis IDAPA 16.01.05.008 (40 CFR 264.13 [a][1–3])	RCRA analysis requirements apply to the waste, tank, vault, and piping, and secondary waste generated during remediation.	A	A hazardous waste determination has already been performed for the tank waste. Analysis of the system components is planned per the Phase I FSP (DOE-ID 2000c).
• General Inspections IDAPA 16.01.05.008 (40 CFR 264.15)	In accordance with RCRA, regular inspections must be performed during remediation.	A	Inspections will be conducted, and the information obtained will be incorporated into the Annual Institutional Control and Monitoring Report. Inspections will also be conducted as part of operations and maintenance activities.
• Preparedness and Prevention IDAPA 16.01.05.008 (40 CFR 264, Subpart C)	Soil excavation, waste and tank system removal, and decontamination activities must comply with RCRA requirements.	A	Details regarding how the emergency equipment will be maintained and arrangements with local authorities are outlined in the Phase I HASP (INEEL 2000).
• Contingency Plan and Emergency Procedures IDAPA 16.01.05.008 (40 CFR 264, Subpart D)	Soil excavation, waste and tank system removal, and decontamination activities must comply with RCRA requirements.	A	The Phase I HASP (INEEL 2000) establishes an emergency response plan that documents the coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment.
• Equipment Decontamination IDAPA 16.01.05.008 (40 CFR 264.114)	All equipment used during remediation must be decontaminated in accordance with RCRA requirements if hazardous waste is contacted.	A	Equipment decontamination will be conducted in accordance with the Phase I HASP (INEEL 2000); PLN-461, *INEEL CY2000 Pollution Prevention/Waste Minimization Plan* (INEEL 2000); and waste management procedures outlined in the Phase I Work Plan, Appendix J.

Table 4-4. (continued).

Category	Citation	Relevancy	Compliance Strategy
• Use and Management of Containers IDAPA 16.01.05.008 (40 CFR 264.171–177)	Waste, tank, vault, piping, and any secondary hazardous waste generated during remediation must be managed in accordance with RCRA requirements.	A	The waste management procedures outlined in the Phase I Work Plan, Appendix J ensure waste is compatible with the container and container integrity is maintained. Weekly inspections will be conducted by Waste Generator Services. Secondary containment for all containers with free liquids will be provided at the CERCLA Waste Storage Units (PBF-ARA-1-CARGO-A). For all other containers, a storage area will be graded to provide runoff away from the containers.
• Tank Closure and Post-Closure Care IDAPA 16.01.05.008 (40 CFR 264.197 [a])	Closure of waste, tank, vault, and piping must be conducted in accordance with RCRA requirements.	A	Per the Phase I FSP (DOE-ID 2000c), removal of all waste, system components, gravel, and tank vault will be conducted. Sampling will then occur to verify that a release to the soil has not occurred.
Resource Conservation and Recovery Act—Land Disposal Restrictions			
• Treatment Standards IDAPA 16.01.05.011 (40 CFR 268.40 [a][b][e])	The waste, tank, vault, and piping must be treated, if necessary, to meet RCRA land disposal restriction criteria before disposal.	A	Per the Phase I FSP (DOE-ID 2000c), system component wastes will be analyzed according to LDRs. The sludge has previously been analyzed and will be treated at a TSCA- and RCRA-permitted, off-Site facility. Debris will be sampled to determine if waste meets LDRs or if encapsulation is required for disposal. If encapsulation is required, it will be conducted at Envirocare.
• Treatment Standards for Hazardous Debris IDAPA 16.01.05.011 (40 CFR 268.45 [a–d])		A	Per the Phase I FSP (DOE-ID 2000c), system component wastes will be analyzed according to LDRs. The sludge has previously been analyzed and will be treated at a TSCA- and RCRA-permitted, off-Site facility. Debris will be sampled to determine if waste meets LDRs or if encapsulation is required for disposal. If encapsulation is required, it will be conducted at Envirocare.

Table 4-4. (continued).

Category	Citation	Relevancy	Compliance Strategy
• Universal Treatment Standards IDAPA 16.01.05.011 (40 CFR 268.48 [a])		A	Per the Phase I FSP (DOE-ID 2000c), system component wastes will be analyzed per LDR requirements. The sludge has previously been analyzed and will be treated at a TSCA- and RCRA-permitted, off-Site facility. Debris will be sampled to determine if waste meets LDRs or if encapsulation is required for disposal. If encapsulation is required, it will be conducted at Envirocare.
National Oil and Hazardous Substances Pollution Contingency Plan – Hazardous Substance Response			
• Procedures for Planning and Implementing Off-Site Response Actions 40 CFR 300.440	Applies to all waste treated and/or disposed off the INEEL.	A	Prior to off-Site disposal, EPA Region 10 will be consulted to ensure that any off-Site vendor(s) selected for treatment and/or disposal will meet this requirement.
Toxic Substances Control Act—Polychlorinated Biphenyls			
• PCB Remediation Waste: Performance-based disposal 40 CFR 761.61 (b)(1)	The tank waste must be treated or decontaminated to meet TSCA PCB-disposal criteria.	A	Tank waste will be treated and disposed of at a TSCA- and RCRA-permitted, off-Site facility.
• Decontamination Standards and Procedures: Self-implementing decontamination procedures 40 CFR 761.79 (c)(1) and (2)	The tank, piping, and equipment that come into contact with the tank waste must be decontaminated in accordance with TSCA requirements.	A	The tank, piping, and equipment will be decontaminated by use of a solvent in accordance with the applicable INEEL MCPs, health and safety requirements, and waste management procedures.
• Decontamination solvents 40 CFR 761.79 (d)	Solvents used for decontamination must be managed in accordance with TSCA.	A	Decontamination solvents will be analyzed following use. If the final concentration of PCBs in the solvent is ≤ 2 ppm, it will be burned in the WERF RCRA interim status incinerator. If the final concentration is > 2 ppm, the solvents will be treated along with the tank waste. The applicable INEEL MCPs, health and safety requirements, and waste management procedures will also apply.

Table 4-4. (continued).

Category	Citation	Relevancy	Compliance Strategy
• Limitation of exposure and control of releases 40 CFR 761.79 (e)	TSCA exposure limits apply to all persons conducting decontamination activities for the ARA-16 tank and piping.	A	Air emissions will be monitored during excavation, and dust suppression measures will be used to ensure protection against release to the environment. Personal protective equipment (PPE) will be required as per the Phase I HASP (INEEL 2000) to prevent dermal contact and inhalation.
• Decontamination waste and residues 40 CFR 761.79 (g)	Waste and residuals must be decontaminated in accordance with TSCA.	A	Disposition of decontamination solutions will comply with the applicable INEEL MCPs, health and safety requirements, and waste management procedures.
Location-Specific ARARs			
National Historic Preservation Act			
• Historic properties owned or controlled by federal agencies 16 USC 470 h-2	In accordance with federal requirements, the site must be surveyed for cultural and archeological resources before construction, and appropriate actions must be taken to protect any sensitive resources.	A	A cultural and archeological resource investigation was performed. Summaries of the results of the investigation are provided in Appendix I. The investigation shows that there are no cultural or archeological resources within this site.
• Identifying Historic Properties 36 CFR 800.4			
• Assessing Effects 36 CFR 800.5			
Native American Graves Protection and Repatriation Act			
• Custody 25 USC 3002 (43 CFR 10.6)	In accordance with federal requirements, the site must be surveyed for cultural and archeological resources before the commencement of construction, and appropriate actions must be taken to protect any sensitive resources.	A	A cultural and archeological resource investigation was performed. Summaries of the results of the investigation are provided in Appendix I. The investigation shows that there are no cultural or archeological resources within this site.
• Repatriation 25 USC 3005 (43 CFR 10.10)			
To-be-considered guidance			
Radiation Protection of the Public and the Environment			

Table 4-4. (continued).

Category	Citation	Relevancy	Compliance Strategy
• DOE Order 5400.5 Chapter II (1)(a,b)	The order specifies limits on the effective dose to the public from exposure to radiation sources and airborne releases.	—[c]	Will be met by administrative and engineering controls during excavation of contaminated soils, excavation of the tank, and by backfilling and vegetating excavated areas, as necessary, after closure. Job Safety Analyses and/or Radiological Work Permits will be prepared for tasks where there is the potential for exposures to radioactive contamination/materials. Radiological work permits will only be used as determined by the radiological control technician, based on the INEEL *Radiological Control Manual* (Manual #15).

a. The selected remedy for ARA-16 focuses on the waste and tank system. Contaminated soil will be addressed in conjunction with the remediation of the contaminated soil Site ARA-23, which will be included in the WAG 5 RD/RA Phase II Work Plan.

b. A = Applicable; RA = Relevant and appropriate

c. TBCs are not classified as applicable or relevant and appropriate.

Table 4-5. Compliance with Regulatory Requirements for the Inactive Waste Systems.

Category	Citation	Relevancy	Compliance Strategy
Action-Specific Regulatory Requirements			
Rules for the Control of Air Pollution in Idaho			
• Toxic Substances IDAPA 16.01.01.161	The release of carcinogenic and noncarcinogenic contaminants into the air must be estimated before the start of construction, controlled, and monitored during excavation of soil, removal of waste system components, and decontamination of components and piping.	A[a]	Releases of carcinogenic and noncarcinogenic contaminants into the air from the site are addressed in Appendix H. Air emissions will be monitored during excavation, and dust suppression measures will be used.
• Toxic Air Emissions IDAPA 16.01.01.585 and .586		A	
• Fugitive Dust IDAPA 16.01.01.650 and .651	Requires control of dust at all times, especially during excavation and removal of the waste system components and piping.	A	Dust suppression measures will be implemented, as necessary, during the remedial action to minimize the generation of fugitive dust. These measures may include water sprays, use of tarps, keeping vehicle speeds to a minimum, and work controls during periods of high wind.
• Requirements for Portable Equipment IDAPA 16.01.01.500.02	Portable equipment for removal of the waste system components and any portable support equipment must be operated to meet state and federal air emissions rules.	A	The use of any portable equipment will comply with the appropriate INEEL Plans and MCPs and be in accordance with the project HASP (INEEL 2000).
National Emission Standards for Hazardous Air Pollutants			
• Radionuclide Emissions from DOE Facilities 40 CFR 61.92 • Emission Monitoring 40 CFR 61.93 • Emission Compliance 40 CFR 61.94(a)	Limits exposure of radioactive contamination release to 10 mrem/year for the off-Site receptor and establishes monitoring and compliance requirements.	A	Releases of radiological contaminants into the air from these sites are addressed in Appendix H. Air emissions will be monitored during excavation, and dust suppression measures will be used. The calculated emissions will be included in the INEEL's annual NESHAPs report, which determines the effective dose equivalent from the INEEL to members of the public.
Resource Conservation and Recovery Act—Standards Applicable to Generators of Hazardous Waste			
• Hazardous Waste Determination IDAPA 16.01.05.006 (40 CFR 262.11)	A hazardous waste determination is required for the waste system components, piping, and any secondary waste disposed on the INEEL.	A	A hazardous waste determination will be developed to evaluate sampling data and process knowledge to determine disposition of the waste. This will be completed per MCP-69, "Waste Generator Services–Hazardous Waste Management."

Table 4-5. (continued).

Category	Citation	Relevancy	Compliance Strategy
Resource Conservation and Recovery Act—Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Units			
• General Waste Analysis IDAPA 16.01.05.008 (40 CFR 264.13 [a][1–3])	Analysis requirements apply to the waste system components, piping, and secondary waste generated during remediation.	A	Sampling will be performed as per the Phase I FSP (DOE-ID 2000c) to determine if the waste meets the LDRs.
• General Inspections IDAPA 16.01.05.008 (40 CFR 264.15)	Regular inspections must be performed during remediation.	A	Inspections will be conducted, and the information obtained will be incorporated into the Annual Institutional Control and Monitoring Report. Inspections will also be conducted as part of operations and maintenance activities.
• Preparedness and Prevention IDAPA 16.01.05.008 (40 CFR 264, Subpart C)	Applies to soil excavation, waste and debris removal, and decontamination activities.	A	Details regarding how the emergency equipment will be maintained and arrangements with local authorities are outlined in the Phase I HASP (INEEL 2000).
• Contingency Plan and Emergency Procedures IDAPA 16.01.05.008 (40 CFR 264, Subpart D)	Applies to soil excavation, waste and debris removal, and decontamination activities.	A	The Phase I HASP (INEEL 2000) establishes an emergency response plan that documents the coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment.
• Equipment Decontamination IDAPA 16.01.05.008 (40 CFR 264.114)	All equipment used during remediation must be decontaminated if hazardous waste is contacted.	A	Equipment decontamination will be conducted in accordance with the Phase I HASP (INEEL 2000); PLN-461, *INEEL CY2000 Pollution Prevention/Waste Minimization Plan* (INEEL 2000); and waste management procedures outlined in the Phase I Work Plan, Appendix J.
• Use and Management of Containers IDAPA 16.01.05.008 (40 CFR 264.171–177)	Applicable to the waste system components, piping, and any secondary hazardous waste generated during remediation and managed in containers.	A	The waste management procedures outlined in the Phase I Work Plan, Appendix J ensure waste is compatible with the container and container integrity is maintained. Weekly inspections will be conducted by Waste Generator Services. Secondary containment for all containers with free liquids will be provided at the CERCLA Waste Storage Units (PBF-ARA-1-CARGO-A). For all other containers, a storage area will be graded to provide runoff away from the containers.

Table 4-5. (continued).

Category	Citation	Relevancy	Compliance Strategy
Resource Conservation and Recovery Act—Land Disposal Restrictions			
• Treatment Standards IDAPA 16.01.05.011 (40 CFR 268.40 [a][b][e])	Waste system components and piping must be treated, if necessary, to meet land disposal restriction criteria before disposal commences.	A	Per the Phase I FSP (DOE-ID 2000c), waste will be analyzed according to LDRs. Sludge will be treated at WERF and stabilized, if necessary, to meet the Envirocare waste acceptance criteria. Debris will be sampled to determine if waste meets LDRs or if encapsulation is required for disposal. If encapsulation is required, it will be conducted at Envirocare.
• Treatment Standards for Hazardous Debris IDAPA 16.01.05.011 (40 CFR 268.45 [a–d])		A	Per the Phase I FSP (DOE-ID 2000c), waste will be analyzed according to LDRs. Sludge will be treated at WERF and stabilized, if necessary, to meet the Envirocare waste acceptance criteria. Debris will be sampled to determine if waste meets LDRs or if encapsulation is required for disposal. If encapsulation is required, it will be conducted at Envirocare.
• Universal Treatment Standards IDAPA 16.01.05.011 (40 CFR 268.48 [a])		A	Per the Phase I FSP (DOE-ID 2000c), waste will be analyzed according to LDRs. Sludge will be treated at WERF and stabilized, if necessary, to meet the Envirocare waste acceptance criteria. Debris will be sampled to determine if waste meets LDRs or if encapsulation is required for disposal. If encapsulation is required, it will be conducted at Envirocare.
National Oil and Hazardous Substances Pollution Contingency Plan – Hazardous Substance Response			
• Procedures for Planning and Implementing Off-Site Response Actions 40 CFR 300.440	Applies to all waste disposed off the INEEL.	A	Prior to off-Site disposal, EPA Region 10 will be consulted to ensure that any off-Site vendor(s) selected for treatment and/or disposal will meet this requirement.
Toxic Substances Control Act—Polychlorinated Biphenyls			
• PCB Remediation Waste: Performance-based disposal 40 CFR 761.61 (b)(1)	The system waste must be treated or decontaminated to meet TSCA PCB-disposal criteria.	A	Tank waste will be treated and disposed of at a TSCA- and RCRA-permitted, off-Site facility.

Table 4-5. (continued).

Category	Citation	Relevancy	Compliance Strategy
• Decontamination Standards and Procedures: Self-implementing decontamination procedures 40 CFR 761.79 (c)(1) and (2)	The waste system components, piping, and equipment that come into contact with the TSCA-regulated waste must be decontaminated in accordance with TSCA requirements.	A	The tank, piping, and equipment will be decontaminated by use of a solvent in accordance with the applicable INEEL MCPs, health and safety requirements, and waste management procedures.
• Decontamination solvents 40 CFR 761.79 (d)	Solvents used for decontamination must be managed in accordance with TSCA.	A	Decontamination solvents will be analyzed following use. If the final concentration of PCBs in the solvent is ≤ 2 ppm, it will be burned in the WERF RCRA interim status incinerator. If the final concentration is > 2 ppm, the solvents will be treated along with the tank waste. The applicable INEEL MCPs, health and safety requirements, and waste management procedures will also apply.
• Limitation of exposure and control of releases 40 CFR 761.79 (e)	TSCA exposure limits apply to all persons conducting decontamination activities of the waste system components and piping.	A	Air emissions will be monitored during excavation, and dust suppression measures will be used to ensure protection against release to the environment. PPE will be required as per the Phase I HASP (INEEL 2000) to prevent dermal contact and inhalation.
• Decontamination waste and residues 40 CFR 761.79 (g)	Waste and residuals must be decontaminated in accordance with TSCA.	A	Disposition of decontamination solutions will comply with the applicable INEEL MCPs, health and safety requirements, and waste management procedures.
Location-Specific Regulatory Requirements			
National Historic Preservation Act			
• Historic properties owned or controlled by federal agencies 16 USC 470 h-2	The site must be surveyed for cultural and archeological resources before construction commences, and appropriate actions must be taken to protect any sensitive resources.	A	A cultural and archeological resource investigation was performed. Summaries of the results of the investigation are provided in Appendix I. The investigation shows that there are no cultural or archeological resources within this site.
• Identifying Historic Properties 36 CFR 800.4			
• Assessing Effects 36 CFR 800.5			

Table 4-5. (continued).

Category	Citation	Relevancy	Compliance Strategy
Native American Graves Protection and Repatriation Act			
• Custody 25 USC 3002 (43 CFR 10.6)	The site must be surveyed for cultural and archeological resources before construction commences, and appropriate actions must be taken to protect any sensitive resources.	A	A cultural and archeological resource investigation was performed. Summaries of the results of the investigation are provided in Appendix I. The investigation shows that there are no cultural or archeological resources within this site.
• Repatriation 25 USC 3005 (43 CFR 10.10)			
To-be-considered guidance			
Radiation Protection of the Public and the Environment			
• DOE Order 5400.5 Chapter II (1)(a,b)	Limits the effective dose to the public from exposure to radiation sources and airborne releases.	—[b]	Will be met by administrative and engineering controls during excavation of contaminated soils, excavation of the system components, and by backfilling and vegetating excavated areas, as necessary, after closure. Job Safety Analyses and/or Radiological Work Permits will be prepared for tasks where there is the potential for exposures to radioactive contamination/materials. Radiological work permits will only be used as determined by the radiological control technician, based on the INEEL *Radiological Control Manual* (Manual #15).

a. A = Applicable.

b. TBCs are not classified as applicable or relevant and appropriate.

Table 4-6. Compliance with ARARs and TBCs for the WAG 5 contaminated soil site, ARA-25.

Category	Citation	Relevancy	Compliance Strategy
Action-Specific ARARs			
Rules for the Control of Air Pollution in Idaho			
• Toxic Substances IDAPA 16.01.01.161 • Toxic Air Emissions IDAPA 16.01.01.585 and .586	The release of carcinogenic and noncarcinogenic contaminants into the air must be estimated before construction begins, controlled, and monitored during excavation and sorting of soil.	A[a] A	Releases of carcinogenic and noncarcinogenic contaminants into the air from the site are addressed in Appendix H. Air emissions will be monitored during excavation and dust suppression measures will be used.
• Fugitive Dust IDAPA 16.01.01.650 and .651	Requires control of dust at all times, especially during excavation, sorting, and removal of soil.	A	Dust suppression measures will be implemented, as necessary, during the remedial action to minimize the generation of fugitive dust. These measures may include water sprays, use of tarps, keeping vehicle speeds to a minimum, and work controls during periods of high wind.
• Requirements for Portable Equipment IDAPA 16.01.01.500.02	Portable equipment for sorting and removal of soil and any portable support equipment must be operated to meet state and federal air emission rules.	A	The use of any portable equipment will comply with the appropriate INEEL Plans and MCPs and in accordance with the project HASP (INEEL 2000).
National Emission Standards for Hazardous Air Pollutants			
• Radionuclide Emissions from DOE Facilities 40 CFR 61.92 • Emission Monitoring 40 CFR 61.93 • Emission Compliance 40 CFR 61.94(a)	Limits exposure of radioactive contamination release to 10 mrem/yr for the off-Site receptor and establishes monitoring and compliance requirements.	A	Releases of radiological contaminants into the air from ARA-25 sites are addressed in Appendix H. Air emissions will be monitored during excavation, and dust suppression measures will be used. Radionuclide emission calculations and air modeling are presented in Appendix H. The model results in an estimate of 2.2 E-09 mrem/yr dose at the site boundary. The calculated emissions will be included in the INEEL's annual NESHAPs report, which determines the effective dose equivalent from the INEEL to members of the public.
Location-Specific ARARs			
National Historic Preservation Act			
• Historic properties owned or controlled by federal agencies 16 USC 470 h-2	The site must be surveyed for cultural and archeological resources before construction, and appropriate actions must be taken to protect any sensitive resources.	A	A cultural and archeological resource investigation was performed. Summaries of the results of the investigation are provided in Appendix I. The investigation shows that there are no cultural or archeological resources within this site.

Table 4-6. (continued).

Category	Citation	Relevancy	Compliance Strategy
• Identifying Historic Properties 36 CFR 800.4 • Assessing Effects 36 CFR 800.5			
Native American Graves Protection and Repatriation Act			
• Custody 25 USC 3002 (43 CFR 10.6)	The site must be surveyed for cultural and archeological resources before construction commences, and appropriate actions must be taken to protect any sensitive resources.	A	A cultural and archeological resource investigation was performed. Summaries of the results of the investigation are provided in Appendix I. The investigation shows that there are no cultural or archeological resources within this site.
• Repatriation 25 USC 3005 (43 CFR 10.10)			
To-be-considered guidance			
Radiation Protection of the Public and the Environment			
• DOE Order 5400.5 Chapter II (1)(a,b)	Limits the effective dose to the public from exposure to radiation sources and airborne releases.	—[b]	Will be met by administrative and engineering controls during excavation of contaminated soils and by backfilling and vegetating excavated areas, as necessary, after closure. Job Safety Analyses and/or Radiological Work Permits will be prepared for tasks where there is the potential for exposures to radioactive contamination/materials. Radiological work permits will only be used as determined by the radiological control technician, based on the INEEL *Radiological Control Manual* (Manual #15).

a. A = Applicable; RA = Relevant and appropriate

b. TBCs are not classified as applicable or relevant and appropriate.